

<p>Company Name and Contact Details:</p>	 <p>Farming, Food and Health. First</p>
<p>AgResearch Unlocking Cellulosic Biofuels Program Heather Went – Business Development Manager www.agresearch.co.nz heather.went@agresearch.co.nz 06 351 8035</p>	<p>Core Skill(s):</p>
<p>AgResearch is New Zealand’s largest Crown Research Institute (CRI) with a mission to create sustainable wealth in the pastoral and biotechnology sectors through innovation.</p>	<ul style="list-style-type: none"> • Recombinant protein expression • Enzyme characterization & enhancement • Plant technology and product development
<p>In 2008, AgResearch won funding from the Foundation for Research, Science and Technology (FRST) for the six year “Unlocking Cellulosic Biofuels” program. The key output from this program will be an <i>in planta</i> enzyme manufacture technology capable of cost-effectively producing enzymes, using a seed crop to harvest the high value proteins for use in large-scale biorefineries.</p>	<p>Biofuel Focus:</p>
<p>Biofuel enzymes are currently produced by fermentation. However, in order to produce the volumes of enzymes required to generate significant amounts of 2nd generation biofuels, there will need to be prohibitively high levels of investment in new enzyme production facilities, or an alternative way of producing the enzymes. Producing enzymes <i>in planta</i> will be cost-effective, require minimal capital investment and be rapidly scalable in response to demand compared to building new, high-cost infrastructure for fermentation-based enzyme manufacture.</p>	<ul style="list-style-type: none"> • 2nd generation ligno-cellulosic feedstocks • Bioethanol, biodiesel or biobutanol
<p>This key enabling technology will be compatible with the full range of cellulosic feedstocks (trees, grasses, municipal solid waste) and with algal, yeast or bacteria-based biorefinery processes yielding a range of liquid biofuels. High merit enzymes are being sourced from rumen microbes, geothermal vent microbes, and commercial sources; and tailored for manufacture <i>in planta</i> and to act on a range of feedstocks. Selected enzymes will be linked to a proprietary protein that will stabilise the enzyme in the seed, and aid purification and emulsification properties of the enzyme while maintaining its efficacy.</p>	<p>Core Product/Activity:</p>
<p>Technology development is being undertaken by proven science teams from AgResearch and Waikato University with strong track records in delivering outcomes from collaborative networks. We are building on prior work in the areas of recombinant protein expression, enzyme characterization and enhancement, and plant-based product development and commercialisation.</p>	<ul style="list-style-type: none"> • Cost-effective, scalable, biofuel enzyme production
<p>AgResearch is a member of the Ministry of Research, Science & Technology (MoRST)-sponsored NZ Renewable Energy Transformation Research Science and Technology (TRST) group, alongside Scion and GNS.</p>	<p>Key Project Activities:</p>
	<ul style="list-style-type: none"> • Plant-manufactured industrial enzymes
	<p>Leading Edge:</p>
	<p><i>AgResearch’s biofuel enzyme manufacture technology will be compatible with the full range of ligno-cellulosic feedstocks coupled with algal, yeast or bacteria-based biorefinery processes.</i></p> <p><i>Using plants to produce enzymes will be more cost-effective, require minimal capital investment and be rapidly scalable in response to demand compared to building new, high-cost infrastructure for fermentation-based enzyme manufacture.</i></p>
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	<ul style="list-style-type: none"> • New Zealand Crown Research Institute
	<p>Employees:</p>
	<ul style="list-style-type: none"> • Over 1000 staff at four campuses
	<p>Production Capacity</p>
	<ul style="list-style-type: none"> • Technology development and licensing